RAILWAY JOTTINGS.

Gloucester.—The long-talked-of docks at Gloucester, it appears, are about to be provided, tenders having been called for by advertisement for works connected with them. The works will comprise the widening of the Gloucester and Berkeley Canal at Lanthony, to the extent of about 60 feet, and for a distance of about 360 yards, and the formation of a branch line, of a mile in length, from the docks to the main line at Over-bridge. The erection of the permanent passenger-station at Gloucester is to be immediately proceeded with. Its site will adjoin that of the Midland station. The Great Western Company have agreed to purchase from the Charity Trustees a piece of land adjoining the workhouse, for the purpose of increasing their goods accommodation at Gloucester. This purchase, says *Felix Farley*, will add about 4,000*l.* to the funds of St. Bartholomew's Hospital. The works at the bridge at Chepstow, on the South Wales line, are being proceeded with.

Somerset Central.—Application is to be made to Parliament for authority to construct a railway from the Bristol and Exeter, at Highbridge, to Glastonbury, and probably to Wells. The Bristol and Exeter Company have agreed to sell the Glastonbury and Highbridge Canal to the above company, and to take shares in the undertaking in lieu of the purchase-money. The length of the proposed line is 12¼ miles, the estimated cost 70,000*l.*, and the gross traffic receipts are estimated at 9,000*l.* per annum.

Conquest of Difficulties.—"It is well known," says Sir Francis Head, "that one of the results of Mr. Robert Stephenson's elaborate investigation was that the London and Birmingham Railway ought to pass through the healthy and handsome town of Northampton. The inhabitants, however, urged and excited by men of influence and education, opposed the blessing with such barbarous fury, that they succeeded in distorting the line and the Kilsby tunnel, to a point five miles off." The Kilsby tunnel is a specimen of engineering which tells with double force after the above relation. Let to a contractor for 99,000*l.*, a quicksand soon stopped his progress, and though the company relieved him from his engagement, the vexation killed him. Mr. Stephenson then undertook the task, and confronted the difficulty with a most inventive spirit. Though the water rose and covered the works, though the pumping apparatus appeared insufficient, though the directors were inclined to abandon the task, the engineer, by the aid of their capital and his skill, with 1,250 men, 200 horses, and 13 steam-engines, raised 1,800 gallons of water per minute, night and day, for eight months, from the quicksand alone, and infused into the workmen so much of his own energy, that when either of their companions were killed by their side, they merely threw the body out of sight, and forgot his death in their own exertions. Three hundred thousand pounds was the cost of this great work. Thirty-six millions of bricks were used in its formation: 177,452 cubic yards of soil were taken from the tunnel in eight months: 246,480,000 gallons of water were pumped from it; and for all this the shareholders of the company are indebted to the "men of influence and education," who excited the people of "the healthy and handsome town of Northampton."—*History of English Railways.*

SURVEY OF MORPETH AND BEDLINGTON.—The Local Board of Health for this district have accepted the tender of Messrs. Hoggar and Rapier, of Wolverhampton, for the survey of the towns of Morpeth and Bedlington, together with the district lying between the rivers Wansbeck and Blythe.

METAL ROOFING.—Mr. C. Cowper has obtained a patent for "improvements in coverings for buildings," dated May 3, 1851. This invention consists in constructing coverings for buildings of plates of iron, formed into the shape of tiles, and furnished with suitable contrivances for fixing the same, and afterwards coated with a vitrifiable glaze or enamel.

Books.

Familiar Letters on the Physics of the Earth, treating of the chief Movements of the Land, the Waters, and the Air, and the Forces that give rise to them. By H. BUFF, Professor of Physics in the University of Giessen. Edited by A. W. Hoffmann, Ph.D., F.R.S. London: Taylor, Walton, and Maberly. 1851.

THE object of the author of this little treatise is not so much to offer new facts to the man of science as to render to a large circle of readers some assistance towards obtaining clearer views and more precise notions of the processes which are at work on the largest scale on this our earth, as well as of the causes by which they are governed, and of their influences on the condition and the general features of the surface of the globe. There is certainly a large class of readers of good general education to whom such a work will be very acceptable, and we believe that they will find the present book both instructive and entertaining. We would have liked to have had "more precise notions" on some points however, or, at least, happier terms, than we find in the following instance in the outset:—

> It is now no longer doubtful, that the primeval shocks and revolutions through which the earth has evidently passed, and to which it owes its present form and state, were manifestations of the same natural forces, whose action, sometimes formative, sometimes destructive, we continue to witness at the present day.

Two of these powers, which work throughout the entire universe, and bring under each other's influence all the heavenly bodies—*gravity* and *heat*—stand out as the mainsprings both of the past revolutions, and of the present changes of the earth. Gravity is the principle of attraction and solidity; heat, of expansion and mobility. All material things bear within them these two sources of action.

Having thus set off with "gravity" and "heat," as the two great cosmical forces, the author proceeds to say that—

> *General gravity* (gravitation)—the mutual attracting power of all heavenly bodies—links the earth with its companion, the moon, and leads the latter in its path round the former, and both in their yearly course around the sun. It maintains the equilibrium of our own solar system, and also that of the whole universe.
>
> *Earthly gravity*—the mutual attracting power of the atoms of the earth—tends to arrange them about a common central point. . . . . The sum of the attractions of all the other particles for any single particle, or for any body upon the earth, is what is called the *weight* of that particle or body.

Admitting that the terms in use to denote the divers regions—if we may so call them—of attractive and repulsive, or at least concentrative and radiative force—such as those of particles in masses, masses in spheres, spheres in stars, and stars in clusters, or clusters in firmaments—are terms very loosely applied even by men of science, still we can scarcely admit of so very unusual and unauthorised an application of such a term as "gravity," to the cause of "solidity." Moreover, although gravity be a term in use to denote certain *sections* of concentrative power, limited by the region or regions of *form*—such as mass, stratum, or sphere—to which it has been applied, and although heat be a term in use to denote a certain section of radiative, or repulsive power, limited, though as yet obscurely, to regions of form allowed by chemists, &c., to be *interior to masses*—such as particle, molecule, atom—and never applied to those *exterior*—such as stratum, sphere, star, cluster, or firmament,—it is certainly going too far to maintain that gravity and heat are a couple of terms entitled to denote something like the attractive and repulsive forces in general. This is an abuse of terms not one whit more justifiable than it would be to select the positive force manifested in cold as attractive force, and then to apply "cold" as a sweeping term denotive of attractive force in general. "Magnetism," even, might just as well be made the co-ordinate antithesis of "heat" as "gravity." The force which we really recognize as the cause of *solidity*, men of science call the cohesive force, not the force of gravity. However, we do not so much blame this author merely, as we do the general looseness with which such terms are applied, though certainly not to so great an extent as in the present instance: imperfect knowledge of the actual organisation and economy of nature is the ultimate reason why such incertitude exists in the use of terms which ought to be definite, and we think could easily be made so, shedding, at the same time, a flood of light upon the nature and the limits of all the recognizable powers and forms—or sections, rather, of power and form—in the universe.

Cyclopædia of useful Arts, Mechanical and Chemical, Manufacturing, Mining, and Engineering: edited by CHARLES TOMLINSON. Illustrated by engravings. George Virtue, London and New York. Parts 1 and 2.

IF the two first shilling parts of this work be a fair sample of the whole, it will constitute a very useful book of reference and instruction. The subjects of most interest to our readers in the two parts issued are ABBATOIRS, AQUEDUCT, ARTESIAN WELLS, ASPHALTUM, AUGUR, AWL, and such like. There are also interesting articles on ÆROSTATION, ANEMOMETER, ANNEALING, ALLOY, and other subjects. The Great Exhibition will furnish materials, it is said, for the work throughout.

The Elements of Perspective, illustrated by numerous Examples and Diagrams. By AARON PENLEY. London: Winsor and Newton. 1851.

THIS is one of a series of useful little books issued by Messrs. Winsor and Newton, the well-known artists' colour makers. Mr. Penley has set forth his knowledge perspicuously, and given a number of carefully drawn examples.

Eliza Cook's Journal. Published by Charles Cook, Raquet-court, Fleet-street.

AMID the host of craft launched on the ever-swelling sea of literature, there are few that are steering more directly for the port of public favour than this unpretending but excellent periodical. In the last volume may be found interesting and instructive papers on all subjects,—history, biography, chemistry, poetry, travels, fiction, &c. &c.—the whole being carefully edited, and forming an admirable family journal. Its typography is exceedingly neat, and the journal is of a nice readable size, and we doubt not the renewed health of its popular editress will tend to infuse fresh vigour into its future numbers.

Miscellanea.

BEDFORDSHIRE ARCHÆOLOGICAL AND ARCHITECTURAL SOCIETY.—A general meeting of this society was held at Bedford on Tuesday in week before last, Col. W. B. Higgins in the chair. The report for 1850-5, was read and adopted; and a letter from the Rev. F. Hose was read as to Dunstable Priory Church, the rebuilding of the south aisle of which was said to be progressing with activity. Discoveries had been made which proved that the external gallery extended all along the west front. The entire columns of one side of another Norman doorway had been found, which had formed the entrance into the aisle now rebuilding. The society contributed 10*l.* to the restoration. A paper on Bedford Castle, by Mr. Hurst, was then read, and was followed by another on Hawnes Church, by the Rev. B. E. Brydges, in which it was stated that its restoration had been just completed. Various objects of interest were exhibited at the meeting.

EDINBURGH SCHOOL OF ARTS.—A *soirée* in honour of this school recently took place in Queen-street Hall. The *soirée* was got up under the auspices of the students attending the institution; and it was chiefly, it is said, got up to celebrate the advantageous position now occupied by the institution, in the purchase of premises in Adam-square, intended at once to accommodate the school and to serve as a monument to the memory of James Watt. The hall was well filled, and the Lord Provost occupied the chair.

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